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ABSTRACT

Although a number of studies have shown that magnet programs have positive effects on educational outcomes for students, most of the outcome measures examined are tests taken before students graduate. This paper attempts to extend those studies by using survey data provided by graduates from a large, urban high school to compare the effects of the magnet and nonmagnet programs on subsequent education aspirations and achievement. The paper suggests that positive effects of magnet schools on educational outcomes may be indirect effects due to the increases in self-esteem that result from being a "special student in a special school." Data were obtained from a questionnaire sent to all graduates of the high school who had received their diplomas during 1984-91 (n=2,780). A total of 336 questionnaires were returned, a 12.1 percent response rate. The data show that graduates from magnet programs had significantly higher educational aspirations than did those who graduated from the nonmagnet program. Although self-esteem also had positive effects on educational aspirations, those effects were independent of--and did not explain--the effects of magnet schools. Self-esteem, but not attending magnet schools, also was found to have significant, positive effects on educational achievement; however, other findings indicate that positive effects for magnet programs on educational achievement were likely to appear with the passage of more time since high school graduation. To summarize, the findings support the conclusion that magnet programs have moderate but long-lasting effects on the educational aspirations of male and female students who come from diverse race/ethnic and social class backgrounds. Two tables are included. (Contains 11 references.) (LMI)

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EFFECTS OF MAGNET PROGRAMS ON EDUCATIONAL ACHIEVEMENT AND ASPIRATIONS

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Abstract

Although a number of studies have shown that magnet programs have positive effects on educational outcomes for students, most of the outcome measures examined are tests taken before students graduate. We attempt to extend these studies by using survey data provided by graduates from a large, urban high school to compare the effects of the magnet and non-magnet programs on subsequent educational aspirations and achievement. We also suggest that positive effects of magnet schools on educational outcomes may be indirect effects due to the increases in self-esteem that result from being "a special student in a special school." Our data reveal that graduates from magnet programs had significantly higher educational aspirations than those who graduated from the non-magnet program. Although self-esteem also had positive effects on educational aspirations, these effects are independent of--and do not explain--the effects of magnet schools. Self-esteem, but not attending magnet schools, also was found to have significant, positive effects on educational achievement, but other findings indicate that positive effects for magnet programs on educational achievement are likely to appear with the passage of more time since high school graduation.

EFFECTS OF MAGNET PROGRAMS ON EDUCATIONAL ACHIEVEMENT AND ASPIRATIONS

The literature concerned with magnet schools and programs suggests that they have three purposes. The first goal is to increase voluntary racial and ethnic desegregation by offering students special curriculum content or teaching methods that are not available in their local school. Research by Rossell (1990) has shown that this voluntary approach produces greater longterm interracial exposure than does mandatory reassignment of students to meet desegregation goals. A second purpose that has been receiving increased attention recently is that magnet schools and programs are part of a larger effort to reform American education by increasing the choices and opportunities available to all students. Thus, Blank and Archbald (1992:82) assert that a true magnet must have at least some students who volunteered for admission and entered voluntarily (enrollment is not limited to neighborhood attendance zones)." The third purpose, stressed by Levine and Ornstein (1993), is that magnet schools are part of the national reform efforts to make schools more effective.

One way to assess effectiveness is to measure student outcomes. Blank and Archbald (1992) reviewed the available research evidence and concluded that magnet schools improve student learning even when selective recruitment is controlled. Subsequently, Archbald (1995) reported the results from a longitudinal cohort analysis among magnet students, neighborhood-school students, and transfer students in an urban district with a school choice program. Two successive cohorts of students were compared on achievement scores, and he found that magnet students generally had the highest performance. Positive effects are also reported for the 32 magnet schools studied by Dentler (1990), but he notes that six of these schools failed to equal their average district achievement scores in reading, and seven failed in

mathematics. Dentler suggests that these differences are due to variations in the organizational characteristics of the schools, a finding that suggests the advantage of comparing magnet and non-magnet programs in the same school. There also is a need for more studies that look at student outcome measures other than standardized tests.

In addition, researchers need to assess more reasons why participation in a magnet program might produce positive student outcomes. Theoretically, one possible reason may be that participation in magnet programs produces higher self-esteem. Particularly at the secondary school level, students in magnet programs are encouraged to see their program as special. Indeed, such encouragement is part of the recruitment and retention strategy used by magnet-program staff to meet their goals of desegregation and choice. It seems likely that students who attend a special program come to see themselves as special persons. This sense of specialness should be particularly high among those who successfully graduated from the magnet programs, and it should result in higher educational achievement and aspirations after graduation for magnet students than for those who graduated from the regular program of the school.

Method and Procedures

Data to test our hypothesis about the positive effects of magnet programs were gathered by means of a questionnaire mailed in Fall, 1991, to all graduates of "Southwestern" High School who had received their diploma during the years 1984-1991. The total population of graduates consisted of 2,780, but completed questionnaires were returned by only 336 (12.1%). It seems likely that the high attrition rate in our study was due to geographical mobility, a possibility supported by the fact that returns from the class of

1991 were higher (21.7%) than those of earlier classes who were less likely to be found at the addresses where they lived when they graduated. Nevertheless, the low return rate means that our findings must be interpreted with caution.

Early in the questionnaire, we asked whether the respondent had been enrolled in a magnet program at "Southwestern" High School. Eighty-five (25.1%) indicated that they had. To measure educational achievement, we asked whether respondent had enrolled in a college or university and, if so, how many semesters had been completed. Responses to this question ranged along a 10 point scale from no enrollments (N=91) to enrollments, but no courses completed (N=69) to 1 semester completed (N=36), to 2 semesters completed (N=30) and on up to 8 or more semesters completed (N=30). As these figures indicate, almost half of the sample (47.2%) had not completed any semesters of higher education, but slightly more than half had completed one or more semesters. In response to another question, not analyzed in this paper, only two respondents indicated that they had completed a bachelor's degree, but this is not too surprising given the fact that most of them had graduated from high school quite recently.

To measure educational aspirations, we asked how much education the respondent planned to complete. Structured responses ranged from high school graduation through completion of a doctoral degree, and respondents were also given the opportunity of specifying an "other" response that did not fit the structured categories. Only one respondent took advantage of this opportunity to indicate that she intended to complete a technical degree. For purposes of this report, educational aspirations were grouped into four categories: high school only (N=29); some college, a technical degree, or an associate of arts degree (N=91); a bachelor's degree (N=79); and a graduate (master's,

doctorate) or professional (law, medicine) degree (N=131). As these figures indicate, average educational aspirations for this sample were quite high.

Included among a set of seventeen statements "that may or may not be true of you" were the ten items of the Rosenberg measure of self-esteem. Respondents were asked to rate these items on a five-point scale ranging from "never true of me" to "almost always true of me." Items were scored or reverse-scored so that the higher the score, the greater the self esteem. Scores ranged from 1.4 to 5.0 with a mean of 4.2 indicating that, on average, respondents had high levels of self-esteem. Analyses of inter-item reliabilities yielded an acceptable Cronbach's α of .808.

Several control variables are also relevant to this paper. These include year of graduation because those who had graduated more recently had had less opportunity to complete semesters of higher education. As noted above, years of graduation included in this study ranged from 1984 (N=28) to 1991 (N=84). Race-ethnic identity, social class, and gender were also controlled because some previous research has shown them to be associated not only with educational aspirations and outcomes (Mickelson, 1984) but also with self-esteem (Orenstein, 1994; Rosenberg and Pearlin, 1978; Wylie, 1979). In addition, it was expected that white respondents would be more likely to have participated in the magnet programs than non-white respondents. By controlling these background characteristics, we hoped to make certain that they did not explain away any effects on educational outcomes that we might find for self-esteem or for participation in magnet programs.

We used respondents' self-reports to define their gender, race and class. Two-thirds of respondents (N=226) indicated their sex as female with the rest (N=113) describing themselves as male. Self-reports for race-

ethnicity and social class revealed that the respondents were a racially and economically diverse group. About one-third (34.8%) identified themselves as African American, about one-fifth (20.4%) described themselves as white or Anglo, the largest group (38.6%) identified as Mexican-American or Hispanic, and there were much smaller numbers of Native Americans (N=12), Asian-Americans (N=2), and others (N=7). In response to our question about social class background, self-descriptions ranged from lower class (5.3%) and working class (18.3%) to upper class (3.5%) with the most popular choice (39.5%) being middle class and the rest choosing either lower-middle class (15%) or upper-middle class (15.3%).

In the analyses reported here, gender was coded in such a way that female is higher than male. This means that any positive effects for gender are effects that are stronger for females than males. and any negative effects for sex are effects that are stronger for males than females. The six-point measure of social class, described above, ranged from a score of 1 for lower class to a score of 6 for upper class. Race-ethnicity was divided into three dummy variables: Whites vs. everyone else, Hispanics vs. everyone else, and Blacks vs. everyone else.

In both the correlational analyses and the regression analyses on which the findings are based, we used data from only those respondents who answered all of the questions used to define the independent, dependent, and control variables. This strategy permits comparisons across all findings but reduces the total sample size to 312.

Results

Table 1 shows the Pearson product-moment correlations among the independent, dependent, and control variables. As expected, both self-esteem

and participation in the magnet programs were positively and significantly correlated with educational aspirations ($r=.195$, $p<.001$, and $r=.154$, $p=.007$, respectively). Also, as expected, self-esteem was positively and significantly correlated with educational achievement ($r=.157$, $p=.006$). Unexpectedly, participation in the magnet programs had no significant relationship with educational achievement ($r=-.051$), but it is possible that some of this relationship might be masked by graduation year which is positively and significantly correlated with participation in magnet programs ($r=.261$; $p<.001$) and is negatively and significantly correlated with educational achievement ($r=-.430$; $p<.001$). It is unlikely, however, that the effect of magnet programs on educational aspirations could be due to self-esteem since the correlation between participation in the magnet programs and self-esteem is a surprisingly low .034.

Also surprising are the findings in Table 1 showing no significant relationships between background variables and either educational aspirations or educational achievements. More consistent with the literature are the significant associations between social class background and race-ethnicity with self-esteem. African-Americans had self-esteem scores that were significantly higher than those for other groups, a finding consistent with many studies that have compared the self-esteem of these two groups since the late 1960s (see Rosenberg, 1981, and Simmons, 1978, Wylie, 1979, for reviews). In contrast, Hispanic respondents had lower self-esteem scores than other groups. As expected, Anglo/whites were more likely to have participated in the magnet programs than respondents from other racial-ethnic backgrounds.

To assess the extent to which the associations reported in Table 1 were independent of one another, two OLS regression analyses were performed. The

first of these examined the effects of both independent and all control variables, except one, on educational aspirations. The exception was the dummy variable called African-American which was eliminated, as is necessary when using multiple dummy variables to define a nominal variable, in order to prevent problems of multicolinearity. Results of this analysis are presented in the first column of data in Table 2 which shows the standardized beta coefficients representing the effects of each independent and control variable on educational aspirations.

When all independent and control variables are taken into account, both participation in the magnet program and self-esteem continue to have significant effects on educational aspirations (β=134, p=.022, and β=180, p=.001, respectively). These effects also explain away the association between year of graduation and educational aspiration reported in Table 1.

The second OLS regression analysis examined the effects of the same set of independent and control variables on educational achievement. Results of this analysis, in the form of standardized beta coefficients, are presented in the right-hand column of Table 2. The findings presented there parallel those reported in Table 1. Even when all independent and control variables are taken into account, only self-esteem and year of graduation have significant effects on educational achievement (β=.111, p=.034, and β=-.439, p<.001, respectively). Contrary to prediction, participation in magnet programs does not have a significant effect on educational achievement.

Discussion

Like all research results, ours must be accepted with caution and within the limits of our study. Nevertheless, our findings support the conclusion that magnet programs have moderate but long-lasting effects on the educational

aspirations of male and female students who come from diverse race-ethnic and social class backgrounds. As such, these findings extend published claims about positive effects of magnet schools and programs that are based on student outcome measures administered before students graduate.

Given the large amounts of money and effort that have been expended on magnet programs, it is reassuring to be able to document positive outcomes. More research is needed, however, to determine whether our findings can be generalized to other schools and, if so, to discover why magnet programs have positive effects on educational aspirations. Among the possible reasons in need of further investigation is our hypothesis, not supported by the self-esteem measure we used, that magnets reinforce in their students the sense of "being a special student in a special school."

Our failure to support our proposition that participation in magnet programs would increase subsequent educational achievements seems to be primarily due to the short amount of time that had elapsed between high school graduation and our survey. Two findings support this interpretation. First, Table 2 shows a strong, independent effect of graduation year on educational achievement (β=-.439, p<.001). The more recent the respondent's graduation, the fewer his or her educational achievements. The second relevant finding, shown in Table 1, is the positive correlation between graduation year and participation in the magnet programs (r=.261, p<.001). Recent graduates (who had little time for educational achievements) were more likely than those who graduated earlier to have been enrolled in magnet programs. Taken together, these findings suggest that the hypothesized positive effect of participation in magnet programs on educational achievement is likely to emerge as the amount of time since high school graduation increases. If subsequent research

were to support this suggestion, the case for long term effects of magnet-school participation, evidenced by our findings for educational aspirations, would be greatly strengthened.

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Table 1: Pearson Product-Moment Correlation Coefficients Showing Relationships Among Independent and Dependent Variables and Between Those Variables and Background Characteristics

	Attended Magnet Program	Self-esteem	Educational Aspirations	Educational Achievement
Self-esteem	.034			
Educational aspirations	.154**	.195***		
Educational achievement	-.051	.157**	.396***	
Gender	-.033	-.053	-.082	.046
Social class background	-.036	.091	.076	-.054
Anglo/white	.151**	.027	-.007	.023
Hispanic	-.068	-.138*	-.081	-.085
African-American	-.107	.133*	.078	.097
Graduation year	.261***	-.077	.111*	-.430***

*p≤.05; **p<.01; ***P≤.001; N=312.

Table 2: Standardized Regression Coefficients (β) Showing Effects of Independent and Control Variables on Educational Aspirations and Achievement

	Educational Aspirations	Educational Achievement
Attended Magnet Program	.134*	.055
Self-esteem	.180***	.111*
Gender	-.075	.033
Social class background	.050	.015
Anglo/white	-.080	.006
Hispanic	-.070	-.075
Graduation year	.078	-.439***
Multiple R^2	.081***	.210***

*p≤.05; **p<.01; ***P≤.001; N=312.